

REMARKS

Claim 11 has been amended to further define the polyether polyol and polyester polyol components. Support for these amendments is found at page 2, line 27-page 3, line 12 (polyether polyol) and at page 4, lines 10-12 (polyester polyol) of the specification.

Claim 11 has further been amended to delete "activator, auxiliary substance or" from component E) because the term "additive" is sufficiently broad to include activators and auxiliary substances.

Claim 12 has been amended to recite that the mol% is based on mols of polyester polyol in which the specified units are present. Claim 12 has further been amended to change the upper limit of components (1) and (5) to make the claimed ranges correspond to those given at page 5, lines 15 and 19 of the specification.

Claim 15 has been amended to delete "activator, auxiliary substance or" because the term "additive" is sufficiently broad to include activators and auxiliary substances.

Claim 19 has been amended to insert "to" between "resistant" and "hydrolysis" to correct an obvious typographical error.

The present invention relates to a process for the production of oil and petroleum-resistant (polyurea)polyurethanes, the products of this process and articles made from the products of this process.

Claims 11-22 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Three specific bases for this rejection were given. Applicants believe that the amendments made to the claims herein remove each of these bases.

The first basis for this rejection was that in Claims 11 and 15, the distinction between an activator, an auxiliary substance and an additive is unclear.

Each of Claims 11 and 15 has been amended to delete "activator" and "auxiliary substance" because those types of materials are included within the expression "additive".

The second basis for this rejection was that within Claim 12, the basis for the claimed mole percents was not specified.

Applicants submit that one skilled in the art would readily appreciate that each of the recited mole percentages is based upon the moles of the polyester polyol component in which those specified units are present. However, in an effort to expedite the prosecution of this case, Claim 12 has been amended to recite that each of the given mol percentages is based upon moles of polyester polyol component.

The third basis for this rejection was that in Claim 19, a word appeared to be missing between "resistant" and "hydrolysis".

Claim 19 has been amended to insert the missing word, "to".

Each of the bases for this rejection has therefore been removed. Withdrawal of this rejection is therefore requested.

Claims 11-22 were further rejected under 35 U.S.C. § 112, first paragraph, on the basis that the specification was not enabling for processes in which any polyether and any polyester is employed.

Applicants have amended Claim 11 to specifically recite that the polyether polyol and polyester polyol have the features required at pages 2-6 of the specification. It is believed that this amendment to Claim 11 (from which Claims 12-22 depend either directly or indirectly) removes the basis for this rejection.

Withdrawal of this rejection is therefore requested.

Claims 11, 15, 17-19 and 21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Mao (U.S. Patent 4,124,572). Applicants believe that their claims as amended hereunder are patentably distinct from the teachings of Mao.

More specifically, Mao discloses thermoplastic polyurethane elastomers produced from a reaction mixture which includes a poly(oxypropylene)-poly(oxyethylene) glycol (molecular weight from 1000 to 3000) containing 25-60% by weight of oxyethylene groups, a polyester polyol (molecular weight from 1000 to 3000), a polyisocyanate and a chain extender. These elastomers are characterized as having excellent high tensile strength, high tear resistance, high elongation, excellent thermal properties, outstanding processability, good mold-ability and paintability.

Mao **does not** teach anything with respect to oil and petroleum resistance. Applicants' claimed invention is directed to a process for the production of oil and

petroleum-resistant (polyurea)polyurethanes, the oil and petroleum-resistant products of this process and oil and petroleum-resistant articles made with these products.

Mao **does not** teach that use of the specific types of polyester polyols required in Applicants' claims in the amounts required by Applicants' claims would be advantageous for any reason. In fact, Mao teaches only that any of the known polyester polyols may be used in the reference compositions and does not recommend any particular amount of polyester polyol.

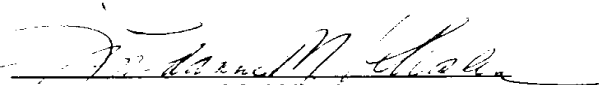
Specific reference was made to Examples A-D in Table I of the Mao reference in the Office Action as support for this rejection of Applicants' claims.

Applicants would note that in each of the reference Examples A-D, the ratio of equivalents of isocyanate to equivalents of hydroxyl groups was either 6.0 (Examples A, C and D) or 4.5 (Example B). Applicants' claimed process requires an isocyanate index of from 70 to 130 (i.e., an isocyanate to hydroxyl equivalent ratio of 0.7 to 1.3) which is clearly not taught or suggested by Examples A-D of Mao. Examples A-D of the Mao reference do not therefore support the rejection of Applicants' claimed invention.

Withdrawal of this rejection is therefore requested.

In view of the above amendments and remarks, reconsideration and allowance of Claims 11-22 are respectfully requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES

IN THE CLAIMS:

Please amend Claims 11, 12, 15 and 19 to read as follows:

11. (Amended) A process for the production of oil and petroleum-resistant (polyurea)polyurethanes comprising reacting a mixture comprising

A1) a polyether polyol component having a number average molecular weight of from 1000 to 8000 g/mol and a hydroxyl functionality of 2.0 or is substantially a mixture with an average hydroxyl functionality of 2.02 to 2.95 comprising

a) at least one polyether diol with a hydroxyl value in the range of 10 to 115 prepared by propoxylation of a difunctional starter compound and subsequent ethoxylation at a ratio by weight of propylene oxide to ethylene oxide of 60:40 to 85:15 and

b) at least one polyether triol with a hydroxyl value in the range of 12 to 56 prepared by propoxylation of a trifunctional starter compound and subsequent ethoxylation at a ratio by weight of propylene oxide to ethylene oxide of 60:40 to 85:15,

A2) from 3 to 30 wt.%, based on total weight of components A1) and A2, of a polyester polyol component having a number average molecular weight of from 1000 to 6000 g/mol prepared by polycondensation of a) an organic polycarboxylic acid and/or a derivative thereof and b) a polyhydric alcohol,

B) a polyisocyanate component,

C) a chain extending agent,

and optionally,

D) a blowing agent and/or

E) ~~an activator, auxiliary substance or additive~~

at an isocyanate index of from 70 to 130.

12. (Amended) The process of Claim 11 in which the polyester polyol component comprises

- (1) from 20 to [47.3] 50 mol%, based on mols of polyester polyol, of units derived from adipic acid,
- (2) from 0-20 mol%, based on mols of polyester polyol, of units derived from glutaric acid,
- (3) from 0 to 10 mol%, based on mols of polyester polyol, of units derived from succinic acid,
- (4) from 10 to 30 mol%, based on mols of polyester polyol, of units derived neopentyl glycol,
- (5) from 10-[30] 40 mol%, based on mols of polyester polyol, of units derived from hexanediol,
- (6) from 0-15 mol%, based on mols of polyester polyol, of units derived from ethanediol, and
- (7) from 10-20 mol%, based on mols of polyester polyol, of units derived from butanediol.

15. (Amended) The process of Claim 11 in which the polyether polyol component, polyester polyol component, chain extending agent, any blowing agent and any ~~activator, auxiliary substance or~~ additive are combined before being reacted with the polyisocyanate component.

19. (Amended) The (polyurea)polyurethane of Claim 17 which is resistant to hydrolysis and microbial action.